AMENDMENT TO THE CLAIMS

1. (Currently Amended) A fluorescence imaging endoscope system comprising:

a diode laser light source for producing excitation light having a wavelength in ~~the~~ a range of 380 nm to 420 nm that induces visible autofluorescence in tissue and a second light source for producing a reference light including red, green and blue wavelength bands, the diode laser light source and second light source being operative in response to control signals from a control system;

an optical combiner that optically couples said excitation light and said reference light onto a common optical path, said excitation light and reference light being coupled into an optical guide that delivers the light to the tissue through an endoscope;

a single image detector at a distal end of the endoscope that detects an autofluorescence image having blue, green and red light components and a reference image of the tissue; and

a data processor that processes the autofluorescence image and said reference image to produce a processed output image of the tissue.

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2. (Previously Presented) The system of Claim 1 wherein the processed output image comprises a visible light image and a color overlay indicative of a predetermined level of fluorescence intensity.

3. (Previously Presented) The system of Claim 2 wherein the single image detector is a charge coupled device detector.

4. (Previously Presented) The system of Claim 1 wherein the optical guide is a fiberoptic bundle extending through a channel of the endoscope to measure dysplasia in a colon or lung of a subject.

5. (Previously Presented) The system of Claim 1 wherein the detector at a distal end of the endoscope comprises a color charge coupled device.

6. (Previously Presented) The system of Claim 1 wherein the excitation light and the reference light are emitted sequentially such that the image detector comprises a monochromatic image sensor that detects a fluorescence image during a first time period and detects a reflected image during a second time period.

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7. (Cancelled)

8. (Previously Presented) The system of Claim 1 wherein the excitation light and reference light are actuated in sequence by the control system.

9. (Cancelled)

10. (Original) The system of Claim 1 wherein the optical guide comprises an optical fiber with a distally mounted lens.

11. (Currently Amended) The system of Claim 1 wherein the excitation light has an angular distribution that is the same as an angular distribution ~~as~~ of the reference light.

12-20 (Cancelled)

21. (Previously Presented) The system of Claim 1 wherein the single image detector further comprises a pixellated integrated circuit device.

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22. (Previously Presented) The system of Claim 1 wherein the single image detector further comprises a CMOS imaging device.

23. (Previously Presented) The system of Claim 1 wherein the diode laser light source comprises a gallium nitride laser diode.

24. (Previously Presented) The system of Claim 23 wherein the gallium nitride laser diode operates at wavelengths in the range of 380 nm to 420 nm.

25. (Previously Presented) The system of Claim 1 wherein the second light source is an arc lamp.

26. (Previously Presented) The system of Claim 1 wherein the second light source is a mercury arc lamp.

27-35 (Cancelled)

36. (Currently Amended) A fluorescence imaging endoscope system comprising:

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a gallium nitride diode laser for producing excitation light having a wavelength in the range of 380 to 420 nm that induces visible autofluorescence in tissue and a second light source for producing a reference light including red, green and blue wavelength bands, the diode laser light source and second light source being operative in response to control signals from a control system;

an optical combiner that optically couples said excitation light and said reference light onto a common optical path, said excitation light and reference light being coupled into an optical fiber delivery system extending through the endoscope system;

a single image detector at a distal end of the endoscope that detects an autofluorescence image having blue, green and red light components and a reference image of the tissue; and

a data processor that processes the autofluorescence image and said reference image to produce a processed output image of the tissue.

37. (Currently Amended) A fluorescence imaging endoscope system comprising:

a diode laser light source for producing excitation light having a wavelength in the range of 380 to 420 nm that

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induces visible autofluorescence in tissue and a second light source for producing a color image;

an optical combiner that optically couples said excitation light and said light from the second light source onto a common optical path, said combined light being coupled into an optical guide that delivers the combined light to the tissue through an endoscope;

a single image detector at a distal end of the endoscope that detects an autofluorescence image having blue, green and red light components and a color image of the tissue; and

a data processor that processes the autofluorescence image and said color image to produce a processed output image of the tissue.

38. (Previously Presented) The system of claim 37, wherein the processed output image comprises a visible light image and a color overlay indicative of a predetermined level of fluorescence intensity.

39. (Previously Presented) The system of claim 37, wherein the single detector is a charge coupled device detector.

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40. (Previously Presented) The system of claim 37, wherein the single image detector comprises a color charged coupled device.

41. (Previously Presented) The system of claim 37, wherein the optical guide is a fiberoptic bundle that extends through a channel of the endoscope to measure dysplasia in a colon or lung of a subject.

~~41~~42. (Currently Amended) The system of claim 37, wherein the excitation light and red, green, and blue light pulses are emitted sequentially such that the image detector comprises a monochromatic image sensor that detects a fluorescence image during a first time period and detects a reflected color image during a second time period.

~~42~~43. (Currently Amended) The system of claim 37, wherein the excitation light and light from the second source are emitted simultaneously such that the respective fluorescence and color images are detected by a color-sensitive image detector.

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~~43~~44. (Currently Amended) The system of claim 37, wherein the optical guide comprises an optical fiber with a distally mounted lens.

~~44~~45. (Currently Amended) The system of claim 37, wherein the excitation light has an angular distribution that is the same as an angular distribution of the light from the second source.

~~45~~46. (Currently Amended) The system of claim 37, wherein the single image detector further comprises a pixellated integrated circuit device.

~~46~~47. (Currently Amended) The system of claim 37, wherein the single image detector further comprises a CMOS imaging device.

~~47~~48. (Currently Amended) The system of claim 37, wherein the diode laser light source comprises a gallium nitride laser diode.

~~48~~49. (Currently Amended) The system of claim 37, wherein the second light source is an arc lamp.

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~~49~~50. (Currently Amended) The system of claim ~~48~~37, wherein the second light source is a mercury arc lamp.

51. (New) The system of claim 1 wherein the detected autofluorescence image includes collagen autofluorescence at 450nm.

52. (New) The system of claim 37 wherein the detected autofluorescence image includes collagen autofluorescence at 450nm.

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